

Claim Amendments Filed 10/25/2006 with Response to Office Action mailed by Examiner on 04/25/2006 in Patent Application No. 10/675,350

Please replace all prior versions, and listings, of claims in the application with the following list of claims:

1. (Cancelled)
2. (Currently Amended) The optical apparatus fiber of claim 47 [[1]] wherein the core of the first optical fiber is ring-shaped.
- 3.-11. (Cancelled)
12. (Currently Amended) The optical apparatus fiber of claim 47 [[11]] wherein the first optical fiber comprises a second cladding comprising a polymer material.
- 13.-17. (Cancelled)
18. (Currently Amended) The optical apparatus system of claim 47 [[15]] comprising an energy source.
19. (Currently Amended) The optical apparatus system of claim 18 comprising a coupler configured to couple energy emitted by the energy source to the first core of the first optical fiber.
- 20.-32. (Cancelled)
33. (Currently Amended) The optical apparatus system of claim 47 [[15]] comprising at least one additional optical fiber.
34. (Currently Amended) The optical apparatus system of claim 33 [[32]] wherein the at least one additional optical fiber comprises a core in optical communication with the first core of the first

optical fiber so that energy can propagate from one of said cores to the other of said cores.

35. (Currently Amended) The optical apparatus system of claim 33 wherein the at least one additional optical fiber is a single mode fiber.

36. (Currently Amended) The optical apparatus system of claim 33 wherein the at least one additional optical fiber is a passive single mode fiber.

37. (Currently Amended) The optical apparatus system of claim 47 [[15]] wherein the second optical fiber is a passive single mode fiber.

38.- 42. (Cancelled)

43. (Currently Amended) Optical apparatus, comprising:
a length of a first optical fiber having a wavelength of operation, said first optical fiber
comprising
a first region comprising a first index of refraction;
a core comprising a second index of refraction that is greater than said first index of
refraction, said core disposed about said first region and comprising a rare earth material for
providing energy having the wavelength of operation responsive to absorbing pump energy
having a wavelength different than the wavelength of operation, said core being multimode
at said wavelength of operation and being capable of focusing energy at at least one location
along the length of said first optical fiber;
a first cladding for receiving pump light, said first cladding disposed about said
multimode core and comprising a third index of refraction that is less than said second index
of refraction; and
a second optical fiber comprising a core and a cladding disposed about said core, said core
of said second optical fiber being in optical communication with said core of said first optical fiber.
The optical apparatus of claim 42 wherein said second optical fiber is a single mode fiber at said wavelength of operation and wherein said core of said second optical fiber is in optical

communication with only a part of the cross section of said core of said first optical fiber.

44. (Currently Amended) The optical apparatus of claim 43 wherein said second optical fiber comprises a grating capable of reflecting energy having the wavelength of operation.

45. (Currently Amended) Optical apparatus, comprising:

a length of a first optical fiber having a wavelength of operation, said first optical fiber comprising

a first region comprising a first index of refraction;

a core comprising a second index of refraction that is greater than said first index of refraction, said core disposed about said first region and comprising a rare earth material for providing energy having the wavelength of operation responsive to absorbing pump energy having a wavelength different than the wavelength of operation, said core being multimode at said wavelength of operation and being capable of focusing energy at at least one location along the length of said first optical fiber;

a first cladding for receiving pump light, said first cladding disposed about said multimode core and comprising a third index of refraction that is less than said second index of refraction; and

a second optical fiber comprising a core and a cladding disposed about said core, said core of said second optical fiber being in optical communication with said core of said first optical fiber.
~~The optical apparatus of claim 42 wherein said second optical fiber is a multimode fiber at said wavelength of operation and wherein said core of said second optical fiber is in optical communication with only a part of the cross section of said core of said first optical fiber.~~

46. (Original) The optical apparatus of claim 45 wherein said second optical fiber comprises a grating capable of reflecting energy having the wavelength of operation.

47. (Currently Amended) Optical apparatus, comprising:

a length of a first optical fiber having a wavelength of operation, said first optical fiber comprising

a first region comprising a first index of refraction;

a core comprising a second index of refraction that is greater than said first index of refraction, said core disposed about said ~~inner-first~~ region and comprising a rare earth material for providing energy having the wavelength of operation responsive to absorbing pump energy having a wavelength different than the wavelength of operation, said core being multimode at said wavelength of operation;

a first cladding for receiving pump light, said first cladding disposed about said multimode core and comprising a third index of refraction that is less than said second index of refraction; and

a second optical fiber comprising a core and a cladding disposed about said core, said core of said second optical fiber being connected to only a part of the cross section of said core of said first optical fiber.

48. (New) The optical apparatus of claim 47 wherein the first cladding comprises a microstructured cladding.

49. (New) The optical apparatus of claim 47 wherein the first optical fiber comprises a second cladding comprising a microstructured cladding.

50. (New) The optical apparatus of claim 47 wherein said second optical fiber comprises a reflective element capable of reflecting energy having the wavelength of operation.

51. (New) The optical apparatus of claim 33 wherein said at least one additional optical fiber comprises a reflective element capable of reflecting energy having the wavelength of operation.

52. (New) The optical apparatus of claim 51 wherein said second optical fiber comprises a reflective element capable of reflecting energy having the wavelength of operation.

53. (New) The optical apparatus of claim 47 wherein at least one of said optical fiber and said second optical fiber comprises a reflective element capable of reflecting energy having the

wavelength of operation, said reflector forming at least a part of a lasing cavity for energy having the wavelength of operation.

54. (New) The optical apparatus of claim 47 wherein the core of the first optical fiber is multimode at said wavelength of operation and provides an image length (L) along the length of the first optical fiber wherein a signal propagated by the fiber forms a mirror image of itself.